

WHAT IS CLAIMED IS:

1. An accumulation type fuel injection system comprising:

a plurality of fuel pipes, the each fuel pipe being formed with a fuel passage therein and a connection head portion at an end thereof;

a common rail having a peripheral wall portion, which has an outer peripheral surface whose cross section is formed substantially in the shape of a round and provides an accumulation chamber therein from one end to the other end of the common rail in an axial direction of the common rail, the accumulation chamber communicating with the fuel passages of the fuel pipes; and

a plurality of pipe connectors fastened to pipe connecting portions formed on the peripheral wall portion of the common rail for holding the connection head portions of the fuel pipes and for connecting the connection head portions of the fuel pipes to the common rail respectively, wherein

the accumulation chamber is formed so that a central axis thereof is deviated from a central axis of the common rail to form a thick wall portion in the peripheral wall portion, the thick wall portion having a thicker wall than other portion of the peripheral wall portion, and

the pipe connecting portions are formed at the thick wall portion of the peripheral wall portion.

2. The accumulation type fuel injection system as in claim 1, wherein the pipe connectors are screwed to the common rail

at the pipe connecting portions.

3. The accumulation type fuel injection system as in claim 2, wherein;

the pipe connecting portions are formed in the thick wall portion of the peripheral wall portion along an axial direction of the common rail at predetermined intervals,

the common rail is formed with a fuel supply hole in one of the pipe connecting portions for introducing high-pressure fuel discharged from a fuel supply pump into the accumulation chamber and with a plurality of fuel branch holes in the other pipe connecting portions for distributing the fuel accumulated in the accumulation chamber to fuel injection valves of respective cylinders of an internal combustion engine,

the common rail is formed with a plurality of fitting holes for fitting the pipe connectors respectively outside the fuel supply hole and the fuel branch holes in a radial direction of the common rail, and

the pipe connecting portions are formed outside the plurality of fitting holes in the radial direction of the common rail.

4. The accumulation type fuel injection system as in claim 2, wherein the pipe connector includes;

a connector main body formed substantially in the shape of a circular pipe, which is fastened to an inner periphery of the pipe connecting portion to make an adhesion surface of the

pipe connector adhere to a pressure receiving seat surface of the pipe connecting portion with a predetermined fastening axial force, and

a nut fastened to an outer periphery of the connector main body to make an adhesion surface of the connection head portion of the fuel pipe adhere to a pressure receiving seat surface of the connector main body with a predetermined fastening axial force.

5. The accumulation type fuel injection system as in claim 2, wherein the pipe connector is formed with a fuel passage hole for connecting the fuel passage formed in the fuel pipe with the accumulation chamber, and is formed with a fixed restrictor in the fuel passage hole.

6. The accumulation type fuel injection system as in claim 2, wherein;

the pipe connector includes a connector main body formed substantially in the shape of a circular cylinder, which is fastened to an inner periphery of the pipe connecting portion, and

a sleeve formed substantially in the shape of a circular cylinder, which is fitted into the connector main body for making an adhesion surface of the connection head portion of the fuel pipe adhere to a pressure receiving seat surface of the pipe connecting portion with a predetermined fastening axial force.

7. The accumulation type fuel injection system as in claim 1, wherein;

the pipe connecting portions are continuous or separate flat surfaces, and

the pipe connectors are bonded to the common rail at the pipe connecting portions.

8. The accumulation type fuel injection system as in claim 7, wherein the each pipe connector is constituted with a sleeve formed in the shape of a cylinder with a bonding surface on one end thereof, the bonding surface being bonded to the pipe connecting portion of the common rail.

9. The accumulation type fuel injection system as in claim 8, wherein;

the sleeve is provided with a fastened portion, which is fastened to a fastening portion formed on the fuel pipe, and

the connection head portion of the fuel pipe is connected to the common rail by fastening the fastening portion of the fuel pipe to the fastened portion of the sleeve.

10. The accumulation type fuel injection system as in claim 8, wherein;

the sleeve is provided with a fastened portion, which is fastened to a fastening portion formed on the pipe connector formed separately from the fuel pipe, and

the connection head portion of the fuel pipe is

connected to the common rail by fastening the fastening portion of the pipe connector to the fastened portion of the sleeve.